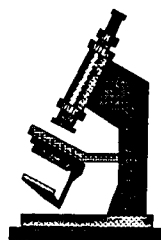
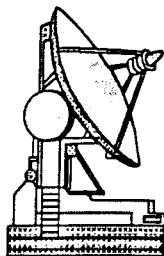


Science and Technology Policy Research Centre

Annual Progress Report 1995/6



**CSD/UNIVERSITY RESEARCH UNIT; SCIENCE
AND TECHNOLOGY POLICY RESEARCH CENTRE**

ANNUAL ADVISORY BOARD MEETING

To be held on May 8, 1996, at 10.30 am

**Venue: HM Robertson Room, Room 4.51,
Department of Economics, Leslie Social Sciences Bldg**

AGENDA

1. Welcome and Introductions
2. The Annual Progress Report - Matters Arising
3. The Financial Statement
4. The Budget for the next financial year
5. Any other business

SCIENCE AND TECHNOLOGY POLICY RESEARCH CENTER (STPRC) DIRECTOR, JULY 1995 -

SUPPORT

The Human Sciences Research Council has recognised the STPRC as one of the dozen national centers (covering the whole field of the humanities and social sciences) that they will field of the humanities and social sciences) that they will support over a four-year period. The International Development Research Center and the University of Cape Town also provides support.

FOCUS

The Center's focus will be at the more applied e.g. technology end and, in particular, on the development of technological capacities at the level of the firm. The Center's precise research programmes are still to be determined but will include technology support for SMEs; the design of the national management system for S&T and innovation policy.

1. BACKGROUND

MISSION

The mission of the STPRC is to contribute to an understanding of how science and technology can most effectively be harnessed so as to meet South Africa's social and economic objectives.

VISION

The vision of the STPRC is of a research unit producing and disseminating high quality research in-house and acting as the hub of a wider network generating research in the field of S&T policy. The STPRC will be a major source of new policy ideas and experiences derived from the international arena. The STPRC will be critically but constructively engaged with government and other S&T stakeholders retaining the independence and autonomy necessary for such an engagement. The STPRC will be intimately involved in the ongoing processes of re-aligning S&T in South Africa so as to serve our national goals. The STPRC's activities will have widespread local and international recognition.

LONG TERM GOALS

The Center

The field of S&T is a very broad one. The "main thrust" of the STPRC is directed at the more applied/technology end of the S&T policy spectrum and the STPRC would wish to support initiatives to develop additional local research centers focused on other aspects of S&T. The addition of other research units would enable the STPRC to undertake larger and cooperative research projects. It would also allow for the possible development of a postgraduate teaching programme through which the STPRC and its staff could more adequately fulfil its goal of training.

With only two permanent members, The STPRC is currently below the "critical mass" required to fulfil all aspects of its mandate. Accordingly, we have begun to sound out funders to ascertain whether they would be prepared to support additional posts. Preliminary soundings are positive. The STPRC will ideally be able to find the funds to employ two additional full-time researchers within the next two years. Over the longer term, continuing core support for posts in the STPRC will make it possible for the STPRC itself, through earned contractual income, to generate the finances to support additional appointments.

The Research

There are two "evergreen" research areas which have and will continue, at least in the medium to long term, to dominate the research agenda of the STPRC. The first relates to the policies to govern the national S&T system (what has come to be called, following the Green and White Papers on S&T "the National System of Innovation"). This follows from the development and integration of the outcome of the White Paper, the S&T Audit and the Foresight Exercise. The second concerns policies which are designed to provide technological support for Small Medium and Micro Enterprises.

The STPRC is already active in both of these fields (see below) and they are the major research activities of the two staff members. This "focus" is in accord with the research directions specified for the STPRC at the outset, and will continue to be the dominant research activities.

In addition, the STPRC is developing research in other S&T areas (see below) and while this research is of a short-term nature, at present, we are hopeful that it will be possible to sustain research in these areas over the longer term.

2. PROGRESS REPORT FOR THE PREVIOUS FINANCIAL YEAR

2.1 ACHIEVEMENT OF GOALS

The STPRC became operational on July 1, 1995. Initially it consisted solely of the Director. For the first few months, much of the Director's time was taken up in establishing the STPRC - acquiring the necessary hardware and equipment and especially advertising and recruiting. Only in January 1996, was it possible to make the further appointment and James Hodge joined the STPRC.

The STPRC as a center, rather than a one-person show, began to develop rapidly from the beginning of 1996. The major research and other activities of the STPRC are detailed below.

2.2 PROJECTS

COMPLETED PROJECTS

The S&T Green Paper: the STPRC organised the process entailed in the production of this document for the Department of Arts, Culture, Science and Technology. Funding for this activity was from the IDRC (Canada). The writing team met for 3 weeks in October, 1995 when the first draft of the Green Paper was produced.

The S&T White Paper: D Kaplan was one of the four critical readers for the White Paper. This entailed the provision of comment over a four week period in April, 1996.

The Telecommunications Green and White Papers: D Kaplan was a member of the Advisory Group for the Green Paper. Professor Robert Horwitz was a member of the working group that produced both the Green and the White Papers.

CURRENT PROJECTS

Comprehensive Commission on the Labour Market

D Kaplan is a member of this very broad ranging Commission on the labour market and is particularly concerned with the issues of Industrial Strategy and Productivity Enhancement. The work of the Commission will be completed by end of June 1996.

Innovation in South African Manufacturing Firms, a Survey

This survey aims to measure the innovation expenditures (as opposed to R&D) on the part of South African manufacturing firms. The survey instrument was developed by D E Kaplan based upon the survey instrument utilised now in the European Union. This is supported by the Industrial Strategy Project (ISP) and is being undertaken jointly with the Foundation for Research and Development (FRD). Returns have been received from over 200 firms and the preliminary results are exciting. A joint ISP-FRD publication will be written in mid-1996.

Innovation in South African Manufacturing Firms, Case Studies

This is an ISP project. There are two case studies here. The first is of a highly innovative South African manufacturing company and its supplier network. The second looks at a number of firms, in the auto-components sector, whose innovative possibilities are highly constrained eg. via licencing agreements. Raphael Kaplinsky (IDS) and Edmond Mhlongo (currently at the National Peace Commission in Durban have undertaken the first, while Anthony Black has undertaken the second. They are supervised by D Kaplan. Both studies are in draft form and are nearing completion.

Manufacturing Technology Services for SMEs: A Needs Assessment

The research project forms part of an initiative by Business Development Services (BuDS) to establish four pilot manufacturing technology centres (MTCs). The MTCs will essentially offer technology consulting and training services to manufacturing SME's within the region that they are established. The specific brief of the SPRC is to perform the technology needs assessment phase of the project. This information will then be fed to those involved in the physical setting-up of the MTCs and the design of the services and training to be offered to SME's. The information examines the competitive pressures that SME's face, their existing production technologies and technological skills, their formal education and training, and the current external sources of assistance. This will hopefully enable us to correctly prioritise assistance services to the most pressing needs of SME's and pitch the services at a level which is accessible to these firms.

Optimal Linkages between tertiary education institutions and industry

The universities and technikons as part of the national system of innovation embody technological capacity (particularly R&D capacity) that can be tapped by the private sector to increase industrial comparative advantage in line with national priorities. However, the nature of South Africa's national system of innovation, and more specifically the mode of

technological innovation, the sectoral divisions within the economy, the differences in research and development emphasis within tertiary education institutes and current research linkages and initiatives, will dictate which partnerships will be profitable and successful. These factors will be assessed in terms of the international and national experience to inform policy on how to optimally both direct academic R&D in line with national priorities and increase the industrial effectiveness of the research.

Biotechnology, Intellectual Property Rights and Technology Transfer

The transfer of technology to South Africa focusing on the acquisition of new biotechnology technologies by local firms. To assess how such transfer is affected by the current regime of intellectual property rights. Involves an examination of intellectual property law and an investigation of biotechnology taking place in South Africa. Issues relating to biodiversity will be a special focus. This research is financially supported by African Center for Technology Studies (ACTS) based in Nairobi. Professor Norman Clark of the Science Policy Research Unit (SPRU) will guide the research.

NEW PROJECTS

It is likely that a number of the projects currently being undertaken, will be extended. For example, the STPRC, and its staff, will probably be involved in further stages of the MTC programme. In addition, the following new projects are currently under discussion:

Information Technology in South Africa

This is a joint research project with Prof. Johnathan Miller of the UCT Graduate School of Business and UNU-INTECH. The proposal is to undertake research clarifying the current position of IT in South Africa in order to produce a paper for a conference in Holland in September, 1996. This will entail assessing local IT capacities and constraints and implications for policy. The project may then be significantly extended. The project is initiated by UNU-INTECH who will provide funding.

Policies to Support the Development of Small Firms in the South African Electronics Industry

Support for this project, which is in the exploratory stage, is from the Friedrich Ebert Stiftung (FES). The 'client' for the research would be the Department of Trade and Industry (DTI). To review the experience of policies in a number of countries which have been successful in fostering development of small firms in the electronics industry. To assess developments and constraints operative on such companies in South Africa. To make some policy proposals for further development.

Clean technologies and Small and Medium Industrial Companies

The IDRC (Canada) has initiated discussions with STPRC in this area. We have had a preliminary meeting, but the framework for this project has not yet been formulated.

Building Linkages between Tertiary Education Institutions and Firms in South Africa

This would develop and continue the work being undertaken by visiting researcher, Dr. L. Recontre. Preliminary discussions have been had with the IDRC, but no clear framework has yet been developed.

Analysing and Assessing Innovation in South African Manufacturing Firms, a Survey.
This survey (see above), will yield considerable data which is available for the first time in South Africa. We are aiming to do a statistical cluster analysis of the data (grouping of like characteristics), in conjunction with the FRD.

NUMBER OF MASTERS AND DOCTORAL STUDENTS

There are no graduate students formally attached to the STPRC. However, both Mike Gray and James Hodge, currently employed by the STPRC, are utilising their research in the STPRC in order to complete their Masters degrees.

Mike Gray B.Comm Hons (Ecos) at UPE: - currently doing a M.Comm (Ecos) at UCT
Thesis title: The Role of Flexible specialisation in Small Business Development in South Africa

James Hodge B.Bus Sci Hons (Ecos) at UCT: - currently doing a M.Comm (Ecos) at UCT
Thesis title: South African Trade in Services

TEACHING

The STPRC offers no formal teaching programmes. However, in the second half of 1996, a module will be offered in the Economics Masters programme.

The STPRC has a weekly reading group. The reading group has a structured discussion of key articles that have appeared in the field recently.

2.3 PUBLICATIONS

- Books and/or Reports published

'An Afterward' in Building a New South Africa: Science and Technology Policy, International Development Research Center (IDRC), Canada Ottawa 1995 (p.69-81).

- Books and/or Reports in print

'Science and Technology in a Democratic South Africa: New Challenges and New Policy Directions', in UNESCO/ORSTOM 20th. Century Science: Beyond the Metropolis, (forthcoming) ORSTOM, Paris.

- Articles in International Journals

'Science and Technology in a Democratic South Africa: What has the New Government Inherited and What are the Major Policy Changes?' in Science, Technology and Society, Vol. 1. No. 1, 1996 (forthcoming) Sage, India.

Other Articles

James Hodge, 'Trade in Services', The Trade Monitor, vol , March 1996

- **Unpublished Reports** 'An input to Facilitate the Department of Trade and Industry Submission to the Science and Technology Green Paper', March, 1996 (pp.25).

- **Conference Papers Forthcoming**

'Scientific Migrations to and from South Africa, with Particular Reference to the Southern African Region' for the International Symposium on **International Scientific Migration Today. New Problematic**, ORSTOM-UNC, Bogota, Colombia, June 24-27.

- **STPRC Working Paper Series**

Kaplan, D.E., **The State of Science and Technology in South Africa. New Priorities. New Policies.** (pp.27).

Horwitz, R., **Telecommunications Policy in South Africa in the Light of International Experience.** (pp. 31).

2.4 STAFF ACTIVITIES

VISITS ABROAD

1. D E Kaplan : June 27 - July 15, 1995.

Discussions with the following :

Prof. Charles Cooper, UNU-INTECH and Prof. Luc Soete, MERIT, both in Maastricht, Holland.

Herr Breyer, BMFT, Bonn

Georg Licht, ZEW, Mannheim

Urgo Muldur, European Commission, DG XII, Brussels

Enrico Deiaco and others, European Commission, DG XIII, Luxemburg

Benoit Antheaume, Roland Waast and Jean-Baptiste Meyer, ORSTOM, Paris

Genevieve Muzart, Jean Guinet and Jean Eric Aubert, OECD, Paris

Raphael Kaplinsky and others, IDS, University of Sussex, Brighton

Mike Hobday and Andrew Davies, Science Policy Research Unit, University of Sussex

David Wield, Open University, England

Mairead O'Driscoll, PRISM, London.

Major Purposes of Visit :

- * Investigate the Community Innovation Survey and its adaptation to South Africa
- * Investigate policies to support innovation
- * Establish linkages and joint programmes
- * Secure visitors to the STPRC

Funding from the Industrial Strategy Project (ISP). A full research report has been made available to UCT.

2. D. E. Kaplan : October 2 - October 6, 1995.

Discussions with the following :

Martin Bell, Norman Clarke and Tom Whiston, Science Policy Research Unit, University of Sussex

Raphael Kaplinsky and others, Institute of Development Studies, University of Sussex

Presentation :

On South Africa industrial policy. This was to a closed meeting of business leaders (eg. Derek Keys, the Governor of the Bank of England) and political leaders (Lord Callaghan, Lord Healey) at which South Africa's policies were explained by a number of key government people. Deputy President Thabo Mbeki was the main speaker.

Funding from the Institute of Development Studies, University of Sussex.

2.5 VISITORS RECEIVED

A number of local and international visitors came to the STPRC. A few are listed here -

Prof. M. Fransman, Director, Japanese-European Technology Studies (organised for Prof. Fransman to give a talk to TELKOM management on "Technology and regulatory changes in the international telecommunications industry - special reference to Japan)

Dr. R. Kaplinsky, Fellow, IDS, University of Sussex. (to work on project; joint visit with Dr. Kaplinsky to a number of government departments to ascertain research needs)

Dr. T. van der Walt, (FRD) - discussion of THRIIP; discussion of a proposed paper

Dr. R. Bloch, (Ntsika) - research for MTC programme

N. Eichler - Friedrich Ebert Stiftung - research on SME's in electronics sector

B. Antheaume and P. Lamboigny, (IFAS) - discussion on links with ORSTOM

W. Blankley, (FRD) - discussions on innovation survey

Prof. C.W.L. Pistorius, Institute for Technological Innovation, University of Pretoria - discussion of research programmes

Prof. S. Newman, University College, London - discussion of the Capricorn Science Park Project

2.6 CONFERENCES AND SYMPOSIA PRESENTED

Member of the eight person Scientific Committee for The International Scientific Migrations Today. New Problematic, ORSTOM-U.N.C. Santafe de Bogota, June 24-27, 1996.

2.7 IMPLEMENTATION OF RESEARCH

Most of the research projects of the STPRC are undertaken for a particular "client." This is often a government department - particularly the DTI and the DACST, but also for other departments, for example, the Department of Labour (the Labour Market Commission). The work relating to the Green and White Papers in S&T and the research to support the MTC programme, are examples. The STPRC also ensures that the research undertaken by visitors to the STPRC has a clear "client." For example, the work of Professor Horwitz on telecommunications has been a direct input into the Green and White Paper processes of the Department of Posts and Telecommunications.

The existence of a "client" for the research provides both a structure and a clear recipient who is able to guide and direct the research to fulfil particular needs.

Linkages with government departments are strong and generally effective. With government recasting its policies in this area, particularly through the S&T Green and White Paper, it has been possible to get 'STPRC ideas' into the policy domain.

Some of the research projects, while policy oriented, are more academic and have no clear and immediate clients. Examples of such are the Biotechnology, Intellectual Property Rights and Technology Transfer project and the Innovation in South African Manufacturing Firms, Survey and Case Study projects. In these cases, the research needs to be linked to a broader research endeavour and particularly to international research in the area.

2.8 AFFILIATIONS WITH OTHER INSTITUTIONS

The STPRC has well-established informal linkages with a number of international research institutions. Linkages have been formally established with the following institutions :

Institute for Japanese-European Technology Studies (JETS), University of Edinburgh

United Nations University, Institute for New Technologies (UNU-INTECH), Maastricht, Netherlands

The director of the STPRC has visited both institutions and is personally an associate of both. Discussions are currently under way with both institutions for undertaking joint research programmes and for the STPRC to participate in some of their global research projects.

3. INFRASTRUCTURE

3.1 STAFF:

PERMANENT STAFF

Director : Associate Professor D E Kaplan B.A. B. Com (UCT), MA (Kent), D.Phil
(Sussex)

Chief Scientific Officer : James Hodge B.Bus Sci Hons (Ecos) UCT

Administrative Assistant : Eleanor Neethling

TEMPORARY STAFF

Researcher : Mike Gray B.Comm Hons (Ecos) UPE

Researcher : Rosemary Wolson BSc Hons (UCT), LLB (UCT)

3.2 VISITING ASSOCIATES

Dr. L. Rencontre PhD, B.Sc(Eng) (UCT). Lecturer, School of Process and Mechanical Engineering, Cape Technikon

Prof. Robert Horwitz Phd (Brandeis). Head, Department of Communication, University of California, San Diego

3.3 RESEARCH ASSOCIATES

Edmond Mhlongo (Innovation in SA Manufacturing Firms : Case Studies) - National Peace Committee, Durban.

Raphael Kaplinsky (Innovation in SA Manufacturing Firms : Case Studies), IDS, University of Sussex

Anthony Black, (Innovation in SA Manufacturing Firms : Case Studies), Department of Economics, UCT

3.4 RESOURCES AND EQUIPMENT

The STPRC received a donation from the Friedrich Ebert Stiftung (FES) of two DX486 Computers and one laser printer. Minor items such as a telephone answering machine have

been purchased out of earnings. The rest of the STPRC's equipment, including fax, photocopier and additional computer and printer is shared with the other projects of the DPRU.

4. PLANNING FOR NEXT YEAR

4.1. ONGOING PROJECTS

Ongoing research projects will occupy the STPRC until mid-1996. **The Innovation in South African Manufacturing Firms, a Survey**, will take longer to complete and it, in addition, will generate data which requires analysis and will support further research.

Preliminary work on the new projects, listed above, will also be undertaken - but it is anticipated that the STPRC will undertake a new "suite of projects" in the second part of 1996.

4.2 NEW PROJECTS TO BE INITIATED

The involvement of the STPRC in regard to its two "core" areas of concern, namely policies to govern the national S&T system and policies designed to provide technological support for SME's will certainly continue and will generate a number of synergistic research projects and involvements. The S&T White Paper has posed a number of critical policy issues, most especially in the technology arena, that will be taken up in further processes and the STPRC will want to be engaged therein. The MTC programme likewise, will require research and other support as it moves into the planning and implementation stages. The STPRC would, particularly as a result of its current research to support the MTC programme, be in a strong position to become engaged here.

Two important new projects of the STPRC should be mentioned. The first is that the STPRC will, with the other research units comprising the Development Policy Research Unit (DPRU) be moving its premises - to the Hiddingh Hall campus. Once this move has been undertaken, the STPRC in conjunction with the DPRU, intends to offer a major seminar series in the related areas of technology, trade and industrial policy. These seminars will be aimed at reaching a broader audience. In particular, we would aim to offer seminars in immediately policy relevant areas to the likes of parliamentarians who sit on relevant parliamentary committees. We are already committed to a seminar on critical areas covered in the White Paper on Telecommunications - utilising the second of the STPRC Working Papers as a basis - and have had a very positive response to this proposal.

The second project is that we now have an agreement in principle from L'institut Francais de Recherche Scientifique pour le Developpement en Cooperation (ORSTOM) to undertake a research programme and project in the area of scientific migration and more specifically policies to secure "brain gain." This would entail the secondment to the STPRC for a two year period of an experienced policy researcher (currently based in Colombia) in this field. The intention is to explore the dynamics of scientific migrations and the possibilities of a

programme to secure "brain gain" for South Africa. Preliminary work, in setting this up, and in the collection of data, is now underway. The STPRC Director will be attending the international symposium in the area at the end of June and collection of data etc. has commenced. The secondment will probably commence early in 1997.

4.3 SPECIFIC NEEDS THAT SHOULD BE ADDRESSED

The STPRC has much need of new capital equipment. In particular, there is need for more computers and a further printer. Because STPRC will be located on the Hiddingh campus which is largely based around drama and fine art, some of the software required is not on this particular network. Additional expenditures will be required to licence some software packages.

4.4 STAFF

The point has been made that the present size of the STPRC is below the "critical mass." It is very difficult to raise monies locally for staff positions for research. Support for the two present full-time members of the STPRC has been largely provided by the IDRC (Canada), with some support from the University of Cape Town. But, this will only be sufficient for two years. UCT has given a commitment to support these two positions for a further two years, if that is required. In the interim, the STPRC will attempt to raise the monies from elsewhere. The need is to secure some "core funding" that will allow the STPRC to continue to provide staff support over a longer period of time.

4.5 FUTURE GOALS

The longer term goals of the STPRC have been outlined (see above). The STPRC particularly hopes to initiate more research in the area of S&T policy; to encourage more researchers (local and international) to spend time at the STPRC; to help in the formation of other local policy oriented research centers and to disseminate the outputs of research more effectively to policy makers.

The STPRC is only a few months old - we would hope to see considerable progress in all of these areas within the next year.